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ABSTRACT

This bibliography provides information about publications and presentations by the Human Resources Research Organization during FY 1972. Research reports as well as publications by staff members in professional journals and presentations at professional and military meetings are included. Abstracts are provided for most items. Items are listed under the following code names: Work Units and Research Projects; Basic Research Studies; Technical Advisory Service; and General. Those items that have AD, PB, or ED numbers are so indicated. Appendixes list FY 72 Technical Reports and Professional Papers by number, an author index, and a sponsor index. (Author)

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HumRRO

Human Resources Research Organization

# Bibliography of Publications and Presentations During FY 1972

October 1972

HUMAN RESOURCES RESEARCH ORGANIZATION

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Human Resources Research Organization

# Bibliography of Publications and Presentations During FY 1972

October 1972

HUMAN RESOURCES RESEARCH ORGANIZATION

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# FOREWORD

The Human Resources Research Organization is a nonprofit research and development corporation whose purpose is to improve human performance, particularly in organizational settings, through behavioral and social science research, development, and consultation. HumRRO was established in 1951, as part of The George Washington University, from which it separated in 1969.

The chief product of HumRRO work is information; thus, reporting the results of research efforts is a major endeavor. To this end, this *Bibliography of Publications and Presentations During FY 1972* has been compiled. It complements the cumulative *Bibliography of Publications As of 30 June 1971*, which is a complete record of information about HumRRO research publications up to that time.

HumRRO research and development work focuses on a wide range of training technology, organization psychology, and other human factors problems. HumRRO's research and development is done under research agreements with various departments of the Federal Government, with state and other government agencies, with private industry, and with foundations that are involved in human factors responsibilities.

Meredith P. Crawford
President
Human Resources Research Organization

# DESCRIPTION OF THE BIBLIOGRAPHY

## Purpose

This FY 1972 Bibliography provides information about publications and presentations by the Human Resources Research Organization during FY 1972. It can be used in conjunction with the cumulative *Bibliography of Publications As of 30 June 1971*, which lists research reports issued since HumRRO's establishment in 1951.

## Scope

Research reports published by HumRRO during FY 1972 are listed. Also listed are publications by staff members in professional journals and presentations at professional and military meetings. Contracts under which research efforts have been performed are identified.

Abstracts have been provided for most items. AD numbers are included on those items that are available to qualified users through the Defense Documentation Center (DDC). PB numbers are included, as appropriate, for items listed in DDC under the Publications Board code. Items deposited in the Educational Resources Information Center (ERIC) are identified by ED numbers. Most of the items are available through the National Technical Information Service (NTIS), U.S. Department of Commerce.

## Organization

Items are listed under the research code name (Work Unit or Research Project) or under the type of research effort other than Work Unit or Research Project to which they relate—Basic Research, or Technical Advisory Service. A General section lists items that are not directly related to a specific research project or that are related to several efforts.

Code names for the research programs are listed alphabetically; in each code word group, items are listed chronologically. Within their sections, Basic Research efforts are listed sequentially by number, Technical Advisory Service and General publications by date.

If applicable, the listings include identification of the HumRRO Division at which the research was performed.

Appendices listing FY 72 Technical Reports and Professional Papers by number, an author index, and a sponsor index are included.

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Human Resources Research Organization

# Bibliography of Publications and Presentations During FY 1972

# WORK UNITS AND RESEARCH PROJECTS

**ACCOUNT–Division No. 1 (System Operations)**

**Analysis of Army Experience in Implementing a Mechanized Stock Accounting System (Research for the Department of the Army)**

*Training in Mechanized Stock Accounting Systems in Army Logistics*, by Herbert B. Leedy, Technical Report 72-16, 135 pp., May 1972.

Army experience with a small mechanized stock accounting system, the NCR 500, was studied with respect to personnel and training, in order to improve implementation of newer and more complex computer-based logistics systems. Officers and enlisted personnel in various duty positions connected with NCR 500 systems in four Far Eastern commands were interviewed. Data showed there had been a continual input of underskilled personnel into nearly all of the duty positions in the mechanized stock accounting system and at its major interfaces. Interviews indicated that efficiency would have been promoted by (a) integrating NCR 500 procedures and concepts with repair parts supply procedures and concepts, (b) a total systems approach to training, (c) upgrading the storage operation as well as the supporting stock accounting system, (d) assigning more well-qualified technical supply officers, and (e) training in the NCR 500 system for more noncommissioned officers with repair parts supply experience.

**APSTRAT–Division No. 3**

**Training Strategies Appropriate to Different Aptitude Levels for Selected Training Courses (Research for the Department of the Army)**

"APSTRAT Action Briefing CONARC," by Howard McFann, Kenneth Weingarten, SFC Robert Anderson, and Paul Crick, briefing for CONARC, Fort Monroe, Va., June 1971.

This briefing was a preliminary report on the test of the APSTRAT instructional model as applied to a Field Wireman Course. Reported findings include improved trainee proficiency, fewer recycles, fewer academic drops, and no difference in achievement among different aptitude levels. Savings of approximately $260 per course graduate were made over the cost of conventional training. Evaluations of the model from the viewpoints of the test course personnel and the proponent agency are also presented.

"Individualized Instruction: A Peer-Instructional Approach," by Kenneth Weingarten, paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971.

This paper discusses the issues of individualized instruction on the basis of HumRRO's experience with the APSTRAT instructional model. The discussion includes the developmental history of Work Unit APSTRAT; the strengths and weaknesses of an alternative media approach to individualization; the development of a peer-instructional model; a description of the operation of the model; the technique of phasing-in the model in an ongoing course; and the importance of rigorous quality control. The paper concludes with an analysis of the relationship of the model to the central concerns of individualized instruction.

**AUTOSPAN—Division No. 7 (Social Science)**

**Development and Evaluation of a Self-Instructional Method for Learning a Foreign Language (Research for the Department of the Army)**

"Development and Evaluation of a Self-Instructional Spanish Course," by George H. Brown, paper for XVIIth International Congress of the International Association of Applied Psychology, Liege, Belgium, July 1971; issued as Professional Paper 21-71, 8 pp., October 1971. AD-735 052 ED-057 705

This paper describes the development and evaluation of a self-instructional Spanish course designed to produce an elementary communication skill, sufficient to cope with routine situations. The course has 106 printed lessons and associated tapes. There are two novel pedagogic techniques designed to simulate the experience of using the language in a live conversational situation: simulated tutoring lessons and simulated conversation lessons. Nine military personnel with no prior Spanish training completed the course in an average of 73.7 hours. Average scores on the final examination were: 73%, 85%, and 78%. Results establish the feasibility of building self-instructional foreign language courses to teach useful, elementary, communication skill.

**ASAP—Division No. 1 (System Operations)**

**Manpower Development Program for Managers of Model Alcohol Safety Projects (Research for the Department of Transportation)**

*The Development of a Training Workshop and Handbook for Directors of Alcohol Safety Action Projects (ASAPs)*, by A. James McKnight, Bert B. Adams, and Ernest E. Personeus, (HumRRO IR-D1-71-3), Department of Transportation Contract No. DOT-HS-003-1-003, Final Report, September 1971.

This report describes the development of a training workshop and a handbook for Directors of Alcohol Safety Action Projects (ASAPs). The heart of the development activity was an analysis of the Project Director's job tasks using available NHTSA policy and procedures, information gained from directors of existing ASAPs, and a study of project director functions in related areas. From the results of the task analysis a specification of knowledges and skills required of project directors was prepared. This specification served as the basis for preparation of content for a written handbook and a workshop training program for prospective project directors. The handbook is entitled *Handbook for Project Directors, Alcohol Safety Action Projects.* The content of the workshop is described in the *Proceedings of Management Workshop for Alcohol Safety Action Project Leaders* and in the *Instructor's Guide for Management Workshop, Alcohol Safety Action Project.* An ancillary part of the project was the development of a proposal guide entitled *Guidebook for Proposal Development, Alcohol Safety Action Projects.*

**AVCAD–Division No. 1 (System Operations)**
**Study of Training Improvements**
**(Research for the Department of Transportation)**

*A Study of Training Program Improvements—Volume I: Findings and Analyses; Volume II: Recommendations for Improvement*, by Alan G. Hundt, Robert C. Trexler, and Patrick J. Butler, (HumRRO-FR-D1-72-1), Department of Transportation Contract No. DOT-FA71WA-2687, Final Report, February 1972.

An analysis was made of the Federal Aviation Administration's Air Navigation Facilities Maintenance Training Program. The analysis included: (a) study of the overall training philosophy; (b) comparison of specific instructional activities with the kinds of instructional activities that should be carried on in order to meet the training outcomes required by maintenance concepts; (c) study of the criteria and standards governing the purchase and installation of equipment at the Academy for maintenance training purposes; (d) evaluation of the effectiveness of various teaching methods used to produce the training outcomes required in courses. Documents on the training system were collected and, where documentation was not appropriate for the collection of information, data collection instruments were constructed for the purpose of assessing the adequacy of the instructional system. Conclusions and detailed recommendations pertaining to the improvement of the training program are made.

**BUCKEYE–Division No. 3**
**The Validation of a Set of Occupational Clusters for Use in the Comprehensive Career Educational Model (CCEM)**
**(Research for The Ohio State University)**

*An Occupational Clustering System and Curriculum Implications for the Comprehensive Career Education Model*, by John E. Taylor, Ernest K. Montague, and Eugene R. Michaels, Technical Report 72-1, 80 pp., January 1972. PB-210 089

Design of a proposed occupational clustering system for the Comprehensive Career Education Model (CCEM) was to meet three general criteria: encompass most existing jobs, translate into an entire K-12 curriculum, and show clear advantages over other systems. Researchers examined existing clustering systems for relevance and possible adaptation; no one system met all the criteria, so a new clustering system was devised by synthesizing useful features of existing systems. The proposed system has two crucial dimensions—one stressing functions and contents of occupations, the other emphasizing status or levels of occupations. The proposed clustering system was planned to fulfill three instructional functions: inform students about the world of work, assist students in choosing a suitable career, and provide models to shape instructional objectives and learning experiences.

CAMBCOM—Division No. 4

**Knowledges, Skills, and Thought Processes of the Battalion Commander and Primary Staff (Research for the Department of the Army)**

*Battalion Commander Combat Arms Maneuver Battalion, Identification of Knowledge and Skills and Investigation of Thought Processing*, by Arthur J. DeLuca and Theodore R. Powers, Research By-Product RBP-D4-71-26, 1971. AD-731 305 ED-057 343

CONVAL—Division No. 3

**Evaluation of Community Mental Health Consultation Services to Schools (Research for the National Institute of Mental Health)**

*Preliminary Handbook on Procedures for Evaluating Mental Health Indirect Service Programs in Schools*, by Ernest K. Montague and Elaine N. Taylor, Technical Report 71-18, 124 pp., August 1971. PB-210 091

This study was performed to develop methods and instruments for evaluating community mental health center (CMHC) programs of indirect service consultation to schools. Models for three types of consultation are presented—Staff Development—Client-Centered, Staff Development—Agency-Centered, and Project Development. Each model is designed in stages, with purpose, products, approach, and suggested measures for evaluating each stage. For the two Staff Development models, the evaluation instruments presented can, in some instances, be used directly, and in other instances will require adaptation to local circumstances. The instruments consist of questionnaires to determine consultant and consultee expectations for consultation and their final evaluations of outcomes; consultant logs; films of problem children and response guides; and tape record analysis together with instructions for using and analyzing these assessment instruments. An example of Project Development Consultation and its sample associated evaluation instruments are presented in detail.

**DELTA–Division No. 7 (Social Science)**
**DoD Non-Therapeutic Drug Usage Survey and Results**
**(Research for Advanced Research Projects Agency)**

*Preliminary Findings from the 1971 DoD Survey of Drug Use*, by Allan H. Fisher, Jr., Technical Report 72-8, 70 pp., March 1972.

This report is Phase I of a two-phase research project to study the extent of use of nontherapeutic drugs in the Armed Services, and to identify demographic correlates of drug abuse. A stratified sample of 36,510 enlisted men, representative of the four Armed Services on a worldwide basis, responded to a 73-item Survey of Drug Use. Reported use of drugs in the period Sep 70-Sep 71 was highest for men in the Army. Army personnel also reported the highest daily drug usage rates. Except for the Army, daily usage rates for drugs were less than 2%. Major correlates of daily narcotic use included age, rank, race, and military service. Nontherapeutic drug use is predominantly reported by younger enlisted men, in the lower pay grades. Higher rates of drug use are reported by non-whites. Use of drugs as a civilian is positively related to drug use in the Service. The report also contains findings on drug acquisition, availability, sources of supply, and recognition of drug problems by admitted users of nontherapeutic drugs.

*Analyses of Selected Drug-Related Topics: Findings From Interviews at Four Armed Service Locations*, by Allan H. Fisher, Jr., Technical Report 72-9, 77 pp., March 1972.

This report of Phase II of a two-phase research project designed to investigate reasons for drug use summarizes interview information concerning military job performance effects of drug use, and attitudes toward and knowledge of drug treatment and rehabilitation among servicemen. Major reasons given for the initial use of marijuana in the military were curiosity and enjoyment. Differences in attitudes toward drug use and drug abuse control were found between careerist and non-careerist enlisted men. Awareness of local drug rehabilitation facilities was low, although awareness of DoD and VA programs was higher.

**DOLPHIN–Division No. 1 (System Operations)**
**Impact of Restructured Maintenance Process on ULMS Maintenance Personnel Factors**
**(Research for the U.S. Navy)**

*A Plan for ULMS Weapon System Maintenance and Its Personnel Implications*, by Robert C. Trexler and Paul E. Loustaunau, Final Report, January 1971.

This report describes research performed to develop a plan for the maintenance process applicable to the Undersea Long Range Missile System (ULMS). The plan developed forestalls possible stresses in the acquisition, training, and utilization of maintenance personnel. Interviews were conducted with U.S. Naval Strategic Systems Projects Office (SSPO) personnel, weapon system contractors, and others in related service and civilian organizations and activities. Areas were found where effort can be placed in ULMS planning that should result in ameliorating stresses found in the earlier POLARIS/POSEIDON personnel system. These areas are: hardware, technical documentation, training and career development.

## DRIVER EDUCATION—Division No. 1 (System Operations)

### Development of Driver Education Objectives: A Driving Task Analysis (Research for the Department of Transportation)

"Needed—Goals for Driver Education," by A. James McKnight, *Concepts*, vol. 4, no. 2, Spring—Summer 1971.

"The Development of Instructional Objectives for Driver Education Through Analysis of the Driver's Tasks," by A. James McKnight, paper for Symposium at Institute for Road Safety Research SWOV, Noordwijkerhout, The Netherlands, August 1971.

This paper describes a set of instructional objectives that may be used by driver educators to develop and evaluate their courses. The objectives were derived from a comprehensive and detailed analysis of the driver's tasks and an evaluation of their criticality to the safety and effectiveness of the highway transportation system. A knowledge and performance test was developed to assist driver educators in assessing the degree to which instructional objectives have been attained.

*Driver Education Task Analysis: Task Analysis Methods*, by A. James McKnight and Bert B. Adams, (DOT HS 800 368) Technical Report 72-13, 45 pp., April 1972.

This report describes a method used to analyze and evaluate the criticality of driver behaviors. To assure comprehensive identification of driving behaviors, an analysis was made of the total highway transportation system including the driver, vehicle, roadway, traffic, and natural environment. Each aspect of the system was examined to identify specific situations that drivers encounter and the appropriate responses. The behaviors arising out of the systems analysis were organized into groups of related behaviors or "tasks." The analysis was continued to assure the identification of specific driving responses and associated cues. A group of 100 traffic safety experts, selected from among driver educators, enforcement officers, license officials, and fleet safety personnel, were asked to evaluate the criticality of the 1700 identified behaviors to the safety and efficiency of the highway transportation system. The driving behaviors, together with their associated criticality indices and various items of supporting information gained through a survey of the driving literature, were entered into a set of driving task descriptions.

*Driver Education Task Analysis: The Development of Instructional Objectives*, by A. James McKnight and Alan G. Hundt, (DOT HS 800 370) Technical Report 72-14, 69 pp., April 1972.

This report describes the methods that were used to develop for driver education courses a set of instructional objectives, as well as an evaluation tool to measure their attainment. Both of these tools were based upon the results of a driving task analysis conducted in earlier research. Those driving behaviors considered so critical as to be required of all drivers were organized into a set of performance objectives and accompanying performance standards. A set of enabling objectives, describing the skills and knowledges required in carrying out performance objectives, was also prepared. The evaluation comprises three tests: (1) a Driving Fundamentals Test, an off-road test to measure basic skills involved in controlling motion of the vehicle, (2) a Driving Situations Test, a checklist of student responses to planned and unplanned real-world driving situations, and (3) a Driving Knowledge Test, 105 information items drawn from enabling objectives. Pilot testing at a high school established their feasibility of administration. Recommendations for additional development of the Driving Situations Test are given.

## Educational Workshops—Division No. 5
### (Research for the River Rouge, Michigan School District)

*The Process of Individualizing Instruction*, by Paul G. Whitmore, William H. Melching, and Edward W. Frederickson, Professional Paper 8-72, 10 pp., April 1972. AD-743 156

This paper describes a series of summer workshops for in-service teacher training (Kindergarten, Grades 1, 2, and 3) in the application of techniques and procedures based on pupil mastery of individualized modules of instruction. Contingency reinforcement management methods were demonstrated and practiced in the attempt to change pupil behavioral responses. It is noted that a change to individualized instruction must begin with changes in teacher classroom management skills rather than changes in students, architecture, or materials.

## ENDURE—Division No. 2
### Tank Crew Performance During Periods of Extended Combat
### (Research for the Department of the Army)

*The Effects of a 48-Hour Period of Sustained Field Activity on Tank Crew Performance*, by L.L. Ainsworth and H.P. Bishop, Technical Report 71-16, 109 pp., July 1971. AD-731 219 ED-055 257

A 48-hour field experiment was conducted to determine the effects of sustained activity on the performance of tank crews in communication, driving, surveillance, gunnery, and maintenance activities. Only moving surveillance and some driving activities showed statistically significant performance deterioration over a 48-hour period of work without sleep, but these decrements were not considered to be of practical significance. The experiment showed that the diurnal rhythm of the subjects did not affect performance significantly. The research indicates that changes in unit organization or tactical doctrine are not necessary to accomplish continuous operations. The results of the experiment support the broad conclusion that tank crews using present equipment can maintain operational proficiency during 48 hours of sustained activity.

## ESPRIT—Division No. 2

### Development of Methods for Improving Soldier Adjustment to the Army (Research for the Department of the Army)

*Reenlistment Intentions of Tank Commanders*, by Eugene H. Drucker and Shepard Schwartz, Technical Report 72-17, 43 pp., May 1972.

A battery of tests was administered to 100 tank commanders in Grade E6, to determine factors involved in reenlistment decisions. Tests included a background information questionnaire, an attitude questionnaire, five personality scales, and measures of present and expected future need satisfaction. Subjects were divided into three groups according to their responses to a question dealing with their reenlistment intentions; to reenlist, not to reenlist, and undecided. The results indicate that expected incentive increases were important factors in the reenlistment decision, particularly expected increases in satisfaction of esteem needs and self-actualization needs. While there were significant differences between the groups in attitude toward the Army, it was impossible to determine from the data whether attitude was a cause of the reenlistment decision or a consequence of it. Of the personality scales, only the Socialization scale showed a relationship to reenlistment. Family life appeared to be an important factor in the reenlistment decision.

## IMPACT—Division No. 1 (System Operations)

### Prototypes of Computerized Training for Army Personnel (Research for the Department of the Army)

*Project IMPACT—Computer-Administered Instruction: Preparing and Managing the Content of Instruction, IMPACT Text-Handling Subsystem*, by The IMPACT Staff, Technical Report 71-21, 47 pp., September 1971. AD-732 863 ED-055 450

Project IMPACT is a comprehensive advanced development project designed to produce an effective and economical computer-administered instruction (CAI) system for the Army. This report describes the concepts, approach, and implementation of the Project IMPACT text-handling subsystem. The computer-based facilities for preparing, storing, and retrieving the content of CAI courses of instruction are described, as are CAI courses. Computer software tools are described in terms of their use by course authors.

"Current Status of Computer-Administered Instruction Work Under Project IMPACT," by Robert J. Seidel, paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971.

With shrinking financial resources and a smaller, largely volunteer Army, demands made on personnel and the importance of each individual soldier will increase, posing difficult problems in training. The training must deal with widespread student differences, provide an increasing number of complex skills, and use even smaller numbers of skilled instructors. Computer-administered instruction (CAI) is a most promising approach, if it is developed as a comprehensive and total system. The goal of Project IMPACT is to provide an effective, efficient, and economical CAI system in a total system framework. This paper reviews the (a) reasons for establishment of Project IMPACT, (b) nature of the project and its relevance to needs of the Army, (c) reasons why the Army needs to develop its own capability in CAI, and (d) directions and prospects for delivery of specifications for an operational CAI system for the Army within the next two years.

INGROUP–Division No. 4

**Small-Group Instructional Methods for Military Training**
**(Research for the Department of the Army)**

*Handbook of Small-Group Methods of Instruction*, by Joseph A. Olmstead, Research By-Product, RBP-D4-71-27, June 1971.

LEADREVIEW–Division No. 4

**The Development of a Comprehensive Review of Psychological and Sociological Literature on Organizational Leadership**
**(Research for the Office of Naval Research)**

"Leadership and Social Exchange," by T.O. Jacobs, paper for NATO conference, Brussels, Belgium, August 1971.

This paper presents a definition of leadership in relation to power and authority and in terms of the impact of various types of influence attempts in formal organizations. The actions and reactions of superordinates and subordinates occur in terms of cultural values, group norms, and social responses derived from the social learning processes. Leadership is a type of role behavior that is learned and executed better by some than by others, depending upon the resources that they can apply to the attainment of group goals. Social exchange theory seems to provide a useful framework for analysis of the impact of superordinate influence attempts.

## MARKSMAN—Division No. 4
### Combat Marksmanship
### (Research for the Department of the Army)

"Perspectives on Simulation and Miniaturization," by Michael R. McCluskey, paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971; issued as Professional Paper 14-72, 15 pp., June 1972. AD-748 082

Training applications of simulation and miniaturization are examined, as are areas where research is needed to develop cost-effective simulation methodologies for training. In order for simulation and miniaturization techniques to reach maximum levels of effectiveness, systems analysis is needed to define physical and psychological dimensions, relationships, and aspects. Among the aspects of the system to be considered for simulation are equipment components, personnel, organization, system procedures and processes, input data, output data, and environment.

## MARS—Division No. 7 (Social Science)
### Research Studies and Analysis on Procurement, Utilization, Performance, Retention, and Separation of Military Personnel
### (Research for the Department of Defense)

*Patterns of Drug Usage Among Vietnam Veterans*, by Allan H. Fisher, Jr., HumRRO; MAJ K. Eric Nelson, Medical Corps, U.S. Army; and CPT Jacob Panzarella, Medical Service Corps, U.S. Army, Professional Paper 12-72, 11 pp., May 1972. AD-743 162

A factor analysis was performed on an intercorrelation matrix of reported drug usage frequencies for seven drug categories at two consecutive periods of time. Subjects were 1,010 Army Vietnam veterans in pay grade E6 or below, aged 26 years or less. Retrospective reporting identified drug usage prior to a tour of Vietnam and during the tour. Four factors were extracted: (a) chronic use of marijuana, both before Vietnam and during Vietnam; (b) general drug usage during the Vietnam assignment; (c) pre-Vietnam narcotics usage; (d) pre-Vietnam soft drug usage encompassing both amphetamines and barbiturates. Implications derived were: (a) Improved procedures for selection may be required to identify potential enlistees and Vietnam assignees with drug use problems. (b) Separate rehabilitation efforts may be required to treat successfully both long-term chronic drug users and men whose drug behavior was only recently acquired in Vietnam. (c) Additional analyses are required to study drug use experimentation in Vietnam to determine whether it leads to chronic use of narcotics.

MEDIA–Division No. 2

**Improving Media Implementation in Army Training Programs**
**(Research for the Department of the Army)**

"Theoretical Framework: Some Basic Issues Related to Methods and Media Selection," by Ronald W. Spangenberg, paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971.

The basic thrust of this presentation is that media and methods selections are theoretical and cannot be definitively set out. Circumstances, themselves, may suggest solutions in terms of available media or methods that can be used in particular situations. Theoretical framework can often act as an aid, suggesting or reminding of possible media and methods solutions.

NYSED-TO–Division No. 5

**Qualitative Review of Terminal Objectives and Approximations in Reading**
**(Research for the New York State Education Department)**

"Evaluation of Terminal Objectives in Reading," by William H. Melching, paper for American Educational Research Association meeting, Chicago, Ill., April 1972.

## Organizational Factors–Division No. 4
### (Research for the Department of Health, Education, and Welfare)

*Organizational Factors in the Performance of Social Welfare and Rehabilitation Workers*, by Joseph A. Olmstead, Technical Report 71-20, 50 pp., August 1971; reprinted from *Working Papers No. 1: National Study of Social Welfare and Rehabilitation Workers, Work, and Organizational Contexts*, Social and Rehabilitation Service, May 1971. AD-733 913

This report summarizes present state-of-knowledge on organizational factors related to performance of social welfare and rehabilitation workers. It is based on a survey of general organizational literature, literature dealing specifically with the performance of social welfare and rehabilitation workers, and on HumRRO experience in applying research findings. Included are an analysis of major theoretical approaches to the study of organizations, a discussion of concepts and findings that have particular relevance for social and rehabilitation agencies, implications for applied research concerned with organizational factors that influence performance, and implications for the management of social welfare and rehabilitation organizations.

## PREDICT–Division No. 6 (Aviation)
### Correlational Analysis of Aviator Performance
### (Research for the Department of the Army)

"Multivariate Performance Prediction," by James Dees, paper for Southeastern Psychological Association Convention, Atlanta, Ga., April 1972.

This paper discusses development of a set of regression equations which the U.S. Army Primary Helicopter School could use in determining whether an individual should continue flight training or be eliminated from the program. An estimated probability of successful course completion can be computed, along with an estimated end-of-course grade and percentile ranking. On-going work includes attempts to predict aviator performance in combat on the basis of data bank information, whether an aviator will elect to remain in the service after his obligated tour of duty ends, and probability of aircraft accidents throughout an aviator's career.

READNEED–Division No. 3

**Methodology for Evaluating Reading Requirements of Army Jobs**
**(Research for the Department of the Army)**

"Development and Evaluation of Job Reading Task Tests," by Thomas G. Sticht and John S. Caylor, paper for symposium at annual meeting of American Educational Research Association, April 1972.

Describes research to develop job reading task tests (JRTT) for three military jobs having civilian counterparts: cook, automotive repairman, and supply clerk. Relationships of general reading ability to performance on JRTT are described for men in three groups: an unselected sample, a group selected for special aptitude in a JRTT area, and a group both selected and trained in the JRTT area. Results indicate that, while general reading and JRTT performance are positively correlated, the JRTT are sensitive to selection and training, and hence are measures of special job-reading abilities as well as of general reading abilities.

REALISTIC–Division No. 3

**Determination of Reading, Listening, and Arithmetic Skills Required for Major Military Occupational Specialties**
**(Research for the Department of the Army)**

*Project REALISTIC: Evaluation and Modification of REAding, LIStening, and ArithmeTIC Needs in Military Jobs Having Civilian Counterparts*, by Thomas G. Sticht, John S. Caylor, and Richard P. Kern, Professional Paper 19-71, 43 pp., September 1971; papers presented at Western Psychological Association meeting, Los Angeles, Calif., April 1970. AD-755 040 ED-057 334

The papers in this collection present a description of, and the results of, research in Work Unit REALISTIC. In addition to the first paper which is an overview, the three papers are: "Psychometric Determination of Relationships Among Literacy Skills and Job Proficiency," "Reading Ability, Readability, and Readership: Identifying Job-Related Reading Tasks Performed by Cooks, Clerks, and Mechanics," and "Reducing Discrepancies Between Literacy Skill Levels of Personnel and Literacy Demands of Jobs."

*Determination of Literacy Skill Requirements in Four Military Occupational Specialties*, by Thomas G. Sticht, John S. Caylor, Richard P. Kern, and Lynn C. Fox, Technical Report 71-23, 72 pp., November 1971. AD-736 865

This report describes results of research on the extent of usage of job printed materials and job listening sources as a function of the reading difficulty level of the materials and the reading ability of Army job incumbents. Psychometric data were obtained on relationships of reading ability to performance on Job-Related Reading Task tests, and of reading, listening, arithmetic, and AFQT to job proficiency as indexed by Job Knowledge tests, Job Sample tests, and Supervisor Ratings in four Army jobs. Methods are discussed for reducing discrepancies between personnel literacy skill levels and the literacy demands of the job by remedial literacy training or redesign of job literacy materials. Research results are discussed with regard to implications for selection, training, and research.

"Project REALISTIC: Determination of Adult Functional Literacy Skill Levels," by Thomas G. Sticht, John S. Caylor, Richard P. Kern, and Lynn C. Fox, *Reading Research Quarterly*, vol. VII, Spring 1972, pp. 424-465.

This paper describes data gathered on functional literacy levels for four selected Army jobs: Cooks, Vehicle Repairmen, Supply Clerks, and Armor Crewmen. The data showed that reading difficulty levels in the Repairman and Supply fields exceeded the reading ability of high aptitude men by four to six grade levels, that use of reading materials increased as skill in reading increased, that men in high-demand reading level fields tended to listen for information, and that information on tests, job performance, supervisor's ratings showed positive, significant correlations between literacy variables and the first two indices of job proficiency. Listening and job knowledge were less highly related than reading and job knowledge.

"Mental Aptitude and Comprehension of Time-Compressed and Compressed-Expanded Listening Selections," by Thomas G. Sticht, *Journal of Auditory Research*, vol. 10, 1970, pp. 103-109; issued as Professional Paper 6-72, 11 pp., March 1972. AD-743 274

The comprehensibility of materials compressed and then expanded by means of an electro-mechanical process was tested with 280 Army inductees divided into two groups of high- and low-mental aptitude. Three short listening selections relating to military activities were subjected to compression and compression-expansion to produce seven versions. Data indicate that expanding previously compressed materials to restore the word rate to normal may restore the comprehension of the material to very near normal when the compression/expansion is limited to 40%. Present results substantiate findings that factors limiting the comprehensibility of rapid speech reside more with the inability of the listener to process rapid rates of speech than with the signal distortion produced by the equipment or compression process.

## RELAY—Division No. 7 (Social Science)

### The Impact of Military Service on Occupational Aspirations and Development of Skills (Research for the U.S. Air Force)

*Recruits' Civilian-Acquired Skills: Their Potential Value and Their Utilization in Initial Military Assignments*, by Arthur J. Hoehn, Thurlow R. Wilson, and John A. Richards, (HumRRO TR 72-6), Technical Report AFHRL-TR-72-16, Manpower Development Division, Air Force Human Resources Laboratory, Air Force Systems Command, 129 pp., February 1972.

The objective of the research reported here was to assess the potential value and the utilization of recruits' civilian-acquired skills. A recruit was defined as having a military-relevant civilian-acquired skill if he had had six months or more of job experience in any of 67 common civilian jobs. The research data were obtained during March through June 1971 for four services: Two Army sites, one each for Navy, Marine Corps, and Air Force. Data were collected by administering questionnaires to recruits; obtaining judgments of classification interviewers; and extracting information on initial military assignment, enlistment commitment, and AFQT scores from official records. Results indicate about 40% of the entering personnel surveyed met the civilian-acquired skill (CAS) criterion. Job skills varied, but tended to concentrate in a few civilian job categories. Results suggest that 20-30% of the incoming personnel with six or more months of military-relevant work experience received assignments likely to make significant use of such experience.

*Recruits' Military Preferences and Their Accommodation by the Military Services*, by Arthur J. Hoehn, Thurlow R. Wilson, and John A. Richards, (HumRRO Technical Report 72-10), Technical Report AFHRL-TR-72-19 (in press), Manpower Development Division, Air Force Human Resources Laboratory, Air Force Systems Command, 121 pp., March 1972.

The principal objective was to provide information on recruits' military occupational preferences, match of military assignments to recruits' preferences, and changes that occur in these preferences between service entry and completion of basic training. Questionnaires were administered to recruits from four services just before classification interviewing and eight weeks later after initial military assignment. Small proportions of recruits' first choices were found to coincide with initial assignments in terms of DOD Occupational Groups. However, over 60% received assignments to DOD Occupational Areas to which they gave relatively high interest ratings. Perhaps, for this reason, most men expressed satisfaction with their initial assignments. Recruits considered the services did relatively well in getting and using information on aptitudes and educational background, but not so well on getting and using information on preferences and preservice work. Recruits need improved knowledge of the military work areas.

## RELAY *(Cont.)*

*Recruits' Postservice Occupational and Educational Plans: Nature and the Extent of Influence From Early Military Experience*, by Arthur J. Hoehn, (HumRRO Technical Report 72-15), Technical Report AFHRL-TR-72-28, Manpower Development Division, Air Force Human Resources Laboratory, Air Force Systems Command, 61 pp., April 1972.

Data on the nature of recruits' postservice occupational and educational plans, and on the influence that the first few weeks of military service have on such plans, were collected in March-June 1971 at Army, Navy, Marine Corps, and Air Force sites. One questionnaire was administered at the beginning, and one near the end of basic training. Results show that most recruits planned to be working full-time one year after service, but were uncertain as to the type of work they would be doing. The data suggest that 30-40% of the men considered their initial assignment out of line with their job plans for one year after service. Results on occupational plans for age 35 closely paralleled those for one year after service, but the men seemed to be more definite about the kind of work they would be doing. About 40% said that they planned to be attending college one year after leaving service. Results generally showed early service experience to have little, if any, impact on postservice vocational and educational plans.

*Postservice Occupational and Educational Plans of First-Tour Military Personnel Nearing Separation From the Service*, by Arthur J. Hoehn, (HumRRO Technical Report 72-19), Technical Report AFHRL-TR-72-42, Manpower Development Division, Air Force Human Resources Laboratory, Air Force Systems Command, 158 pp., June 1972.

A study was made of several aspects of the postservice educational and occupational plans for first-tour enlisted personnel nearing separation from military service. A questionnaire was administered at Air Force, Army, Marine Corps, and Navy sites. Analyses were made of the postservice plans of the respondents. Although most men expect to pursue full-time work, results show a widespread interest in further training or education. Only about one of four men expected to use his military job training experience, whether in a civilian job or in related education or training. Results suggest the need for continued, or even improved, pre-separation counseling to assist men in formulating their postservice plans, in locating jobs, and in becoming more aware of the potential value of the job skills they have acquired while in military service.

## RETURN—Division No. 2

### Prerelease Indicators for Military Prisoners
### (Research for the Department of the Army)

*A Partially Annotated Bibliography on Prediction of Parole Success and Delinquency*, by Robert L. Dyer and James H. Harris, Research Product RP-D2-72-1, March 1972.

## SIAF—Division No. 4

### Selection and Training for Small Independent Action Forces (Research for Advanced Research Projects Agency)

*Selection and Training for Small Independent Action Forces: Development of Materials and Procedures*, by Joseph A. Olmstead, Theodore R. Powers, James A. Caviness, and Jeffery L. Maxey, Technical Report 71-17, 56 pp., August 1971. AD-739 706

This report of Phase II of a three-phase research and development project describes the completion of the systems analysis and specification of the critical knowledges and skills required for Small Independent Action Forces (SIAF) performance, and development of 19 Program Descriptions—training procedures and materials for developing the required knowledges and skills. (Program Descriptions had been developed in Phase I for 6 other content areas.) In addition, there is a description and provisional evaluation of a test battery for the selection of SIAF personnel. From a survey of current practices and job analysis data, candidate predictor variables were specified and instruments to measure the variables were identified or developed. Criterion tests of SIAF performance were developed for Phase III validation of selection procedures.

*Selection and Training for Small Independent Action Forces: Final Report*, by Joseph A. Olmstead, James A. Caviness, Theodore R. Powers, Jeffrey L. Maxey, and Fred K. Cleary, Technical Report 72-2, 62 pp., February 1972. AD-737 709

The overall objective of this research was the development of procedures for selecting and training personnel to serve in Small Independent Action Forces (SIAF) units. This report of Phase III of the three-phase research and development project describes research that required two almost completely independent activities: (a) development of a composite training test, and (b) validation of selection tests and final development of selection materials and procedures into a Small Independent Action Forces Selection Program. Training procedures and materials for developing the required knowledges and skills were developed in Phases I and II.

## SKYFIRE—Division No. 5

### Training Methods for Forward Area Air Defense Weapons (Research for the Department of the Army)

*Studies on Reduced-Scale Ranging Training With a Simple Range Finder*, by Michael R. McCluskey, Technical Report 71-24, 35 pp., December 1971 (SKYFIRE I). AD-740 163

Three experiments of reduced-scale stadimetric ranging training were conducted for a criterion range of 1500 meters. The observers for all studies were trained in a reduced-scale (1/48) environment with stadimetric or occlusion ranging aids. Two of the studies also included a full-scale performance test with jet aircraft. The ranging training method consisted primarily of immediate feedback that contained either qualitative or quantitative information. The results of these studies indicated that: (a) the type of feedback (qualitative or quantitative) given during training does not affect ranging performance, (b) the reduced-scale training appears to be valid for the incoming direction of flight but not for the outgoing, and (c) the ranging skill acquired during training did not transfer completely to the full-scale environment. However, performance in the full-scale environment was as accurate after 30 days as it was at the completion of training.

## STAR—Division No. 5
### Aircraft Recognition Training
### (Research for the Department of the Army)

*Comparison and Evaluation of Printed Programs for Aircraft Recognition*, by Elmo E. Miller and Arthur C. Vicory, Technical Report 71-22, 34 pp., October 1971 (STAR III). AD-739 521 ED-054 610

Several printed prototype programs for training visual aircraft recognition were developed and compared experimentally. One program produced an average score of 95% on a printed recognition test (the next closest group test had more than twice as many errors). The program also tended to take the least time to administer (about 15 minutes per aircraft). The training was in three phases: (1) Study of Multi-Image Cards (each showing several views of one aircraft, listing distinctive features); (2) Study of Paired Comparison cards (each showing two or three aircraft that are likely to be confused); (3) Study of Flash Cards (each showing one view of one aircraft—10 different cards for each aircraft). After each phase, tests with printed imagery were administered. The program should be feasible and effective for routine training.

*Studies of Aircraft Recognition Training*, by Paul G. Whitmore, William C. Rankin, Robert D. Baldwin, and Sandra Garcia, Technical Report 72-5, 48 pp., February 1972 (STAR I). AD-739 923

The research dealt with three problem areas: selection of the minimum number of views of each aircraft required for effective recognition training, determination of an appropriate exposure duration for test images, and determination of the relative emphasis needed on friendly and hostile aircraft to produce adequate identification performance. The uniformity of performance on a posttraining test was a function of the number and distribution of the views used in training and the similarity level of the aircraft. Differences in duration from one to five seconds were critical only for the most highly similar aircraft. Both friendly and hostile aircraft need to be given equal training emphasis.

## SYNTRAIN—Division No. 6 (Aviation)
### Modernization of Synthetic Training in Army Aviation
### (Research for the Department of the Army)

*Transfer of Instrument Training and the Synthetic Flight Training System*, by Paul W. Caro, paper for Fifth Naval Training Device Center and Industry Conference, Orlando, Fla., February 1972; issued as Professional Paper 7-72, 10 pp., March 1972. AD-743 155

One phase of an innovative flight training program, its development, and initial administration is described in this paper. The operational suitability test activities related to a determination of the transfer of instrument training value of the Army's Synthetic Flight Training System (SFTS) Device 2B24. Sixteen active Army members of an Officer Rotary Wing Aviator Course who had completed primary training and 9 Instructor Pilots participated in the study. Instrument training was conducted in the SFTS on a proficiency basis. Aircraft checkrides were administered by independent evaluator personnel. Checkride times and grades showed that much of the training now conducted in aircraft could be conducted more efficiently on the ground.

*Determining Training Device Requirements in Fixed Wing Aviator Training*, by Paul W. Caro, Oran B. Jolley, Robert N. Isley, and Robert H. Wright, Technical Report 72-11, 59 pp., April 1972.

A systematic study of all fixed wing pilot training programs at the U.S. Army Aviation School was conducted in FY 1968. The objective was to determine whether training might be made more effective through greater use of synthetic flight training equipment and, if so, to specify the main characteristics of appropriate equipment. Secondary objectives were to assist in developing low-cost devices for one course and to determine the probable cost-effectiveness of a commercially available device in another. A method was developed that identified specific and differential needs for synthetic equipment in each course and determined suitability of existing equipment to meet those needs. A generalizable, systematic method for determining requirements for synthetic training equipment in existing training programs resulted.

## TESTAID–Division No. 5

### Technical Assistance in the Design and Execution of JTF-2 Test 3.1/3.5 (Research for the Department of the Army)

"Tracer Observation for Air Defense Fire Control," by Robert D. Baldwin, *Air Defense Trends*, September 1970; issued as Professional Paper 13-72, 8 pp., May 1972.

Results of HumRRO research to evaluate the problem of the effectiveness of tracer observation as a fire control technique for gun-type air defense weapons are reported. It was found that the machine dynamics of weapon systems are not compatible with the type of dynamics displayed by aircraft in a tactical situation. Also, several illusions are associated with tracer observations, and further, a gunner has difficulty in localizing a tracer with respect to the target because of limitations of stereoscopic vision and time delays associated with the feedback information provided by tracers. A need was indicated for controlled firing tests to evaluate the usefulness of tracer fire control for various combinations of aircraft dynamics, weapon dynamics, and tracer firing frequency.

## TRAINMAN–Division No. 2

### Development of an Instructional Program in Training Technology and Training Management (Research for the Department of the Army)

"Developing Performance Tests for Training Evaluation: A Job Aid for Test Developers," by William C. Osborn, paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971.

This paper describes the major action points in the course of developing a test for training evaluation. The author gives a brief summary of the 14 action points he considers basic for a test developer, from job objectives to final specifications.

## VOLAR–Division No. 3

### Support of the Army's Field Experimentation of Service Attractiveness and Training Programs (Research for the Department of the Army)

"The Experimental Volunteer Army Training Program, A Pictorial Report," Research Product, January 1972.

This pictorial report provides a brief explanation of the HumRRO effort in developing and evaluating an Experimental Volunteer Army Training Program (EVATP). A performance-oriented system designed to minimize the learning lag caused by individual differences found in any large group of learners was developed. Under this concept, all trainees are challenged; the slow learners and those with language barriers succeed, and those with high aptitude have ample opportunity to progress rapidly while being provided the incentive of helping fellow students. The emphasis is on each individual learning those specific skills and knowledges he will actually need to perform a task. Each man must perform each skill in such a manner as to show complete mastery before he passes on to another facet of instruction.

*The Concepts of Performance-Oriented Instruction Used in Developing the Experimental Volunteer Army Training Program*, by John E. Taylor, Eugene R. Michaels, and Mark F. Brennan, Technical Report 72-7, 62 pp., March 1972.

This report describes the planning and implementing of the Experimental Volunteer Army Training Program (EVATP) at Fort Ord early in 1971. This was the Army's first effort to effect major training innovations in the conversion toward an all-volunteer Army. By the fall of 1971, this program was being used as a model for implementing the EVATP at other Army Training Centers. In developing the EVATP system, six established learning principles were applied to Basic Combat Training and Advanced Individual Training to modify the conventional training system. Course objectives and performance tests used were developed jointly by Fort Ord and HumRRO. In a comparison with a conventionally trained group, independently conducted by the Infantry School at Fort Benning, EVATP graduates performed significantly better on five out of seven BCT subjects, and seven out of nine AIT subjects. In general, these gains were shown by men at all levels of aptitude.

*Summary and Review of Studies of the VOLAR Experiment, 1971: Installation Reports for Forts Benning, Bragg, Carson, and Ord, and HumRRO Permanent Party Studies*, by Robert Vineberg and Elaine N. Taylor, Technical Report 72-18, 106 pp., May 1972.

One purpose of Project VOLAR, a field experiment conducted during FY 1971 as part of the Modern Volunteer Army (MVA) program, was to evaluate the effects of VOLAR innovations on attitudes toward the Army and the Army career intentions of officers and enlisted men. This report provides an evaluative summary and consolidation of findings in several studies that focused upon permanent party officer and enlisted personnel. It encompasses (a) evaluations conducted by each VOLAR installation—Forts Benning, Bragg, Carson, and Ord—and described in their post reports, and (b) the HumRRO studies of permanent party personnel at Forts Benning, Carson, Jackson, Knox, and Bragg and at three installations in USAREUR, and of an Army-wide sample. Recommendations for future action are made, based on findings concerning conditions that appear to be important to men in making the Army a more satisfactory place in which to work and live.

**WIN I—Division No. 3**

**Analyses of WIN Team Functioning and Job Requirements**
**(Research for the Department of Labor)**

*Analyses of WIN Team Functioning and Job Requirements—Phase I: Duties and Tasks Performed by Teams and Team Members*, by Richard P. Kern and John S. Caylor, Technical Report 71-19, 120 pp., August 1971. PB-202 811

The team staffing patterns and the experience, education, and training backgrounds of the staffs of 51 WIN teams are described. Current team functioning is described for these teams in terms of how they proportion their time over the major duty areas identified in the Job Activities Inventory developed for this study. In addition, performance of each of the five basic team member positions is described in terms of how each proportions time over the duties and tasks performed. Performance of the respondents of each of these basic team member positions in tasks directly involved in caseload decision making is identified.

*Analyses of WIN Team Functioning and Job Requirements, Final Report—Duties Performed and Style of Functioning, in Relation to Team Effectiveness*, by Richard P. Kern, Technical Report 72-12, 151 pp., April 1972.

Data collected from WIN Employability Development Teams were used to describe team functioning in terms of two major variables: style of functioning in arriving at client-oriented decisions, and in extent to which distribution of job duty effort among team members emphasizes duty area specialization by job position title. Data were analyzed for relationships between team experience, training, and staffing characteristics and the two style of functioning variables; relationships between the two style of functioning variables and criteria of accomplishment of team communication and coordination objectives and criteria of accomplishment of program services and successful enrollee outcome. Recommendations are made regarding team staffing and in-service training based upon data presented in this report and the preceding Phase 1 report.

**WIN II—Division No. 2**

**Development of Guidelines for the WIN Orientation Program with Emphasis on Training in Vocational Assessment**
**(Research for the Department of Labor)**

*Development of a Program of Instruction for Win Employability Orientation*, by William C. Osborn, G. Gary Boycan, and Donald F. Haggard, Technical Report 72-3, 180 pp., February 1972. PB-210 090

This report describes the development of a flexible model program of instruction that included curriculum elements, training objectives, instructional methods and procedures, and measures for evaluating both individual trainee needs and training achievement of Work Incentive Orientation Training. The research is part of an effort to prepare unemployed people for job entry. The instructional program covers 18 major areas of employability orientation; a small study of the effectiveness of training in one of the areas—vocational assessment—is reported herein.

*An Instructional Program for Employability Orientation*, by William C. Osborn, Donald F. Haggard, G. Gary Boycan, Ronald W. Spangenberg, John D. Engel, and Willard H. Pratt, Technical Report 72-4, 306 pp., February 1972.

In the research reported here, specific guidelines that were developed for a national WIN (Work Incentive Program) orientation program are described. Included are enrollee training objectives, an outline of suggested course content for 18 modules of relevant areas of skills and knowledges, tests of enrollee performance, and recommended methods of presenting various subject matters. There are also extensive lists of references and sources of information to aid instructors in preparing lesson plans and courses.

# BASIC RESEARCH STUDIES
(Research for the Department of the Army)

## Basic Research 16—Division No. 5
### Improving Ability to See Military Targets

"Perceptual Style and Detection of Motion in Depth," by William H. Ton, *Perceptual and Motor Skills*, vol. 34, 1972, pp. 423-428; issued as Professional Paper 9-72, 8 pp., April 1972. AD-743 275

Data reported indicate persistent individual differences in the detection of motion in depth—whether an object is approaching or receding. This finding stimulated the hypothesis that "perceptual style" might be the source of at least some of this variance, particularly as regards the detection of slowly moving or distant objects. In a test of this hypothesis, the findings did not yield a significant interaction of perceptual style with rate of movement. However, there was a difference ($p<.12$) in detection times between the two groups who differed with regard to perceptual style. It was hypothesized that this was due to a cautious, slow approach to detection tasks on the part of field-dependent individuals.

"Rate of Apparent Magnification as a Cue to Distance: A Laboratory Investigation," by William H. Ton, *Perceptual and Motor Skills*, vol. 35, 1972, pp. 283-288.

A laboratory study was conducted to determine the extent to which an observer can use magnification of an unknown object as a reliable cue to its range or distance. "Perceptual style" was used as a source of variance. It was concluded that, when both initial sizes and high and low velocity were presented, size alone was used to determine judgment of distance, although rate of magnification as a primary cue to distance cannot be eliminated on the basis of the present experiment.

# TECHNICAL ADVISORY SERVICE

(Research for the Department of the Army)

"Target Detection in the Field," by Jeffery L. Maxey and James A. Caviness, paper for 79th annual meeting of American Psychological Association, Washington, D.C., September 1971; issued as Professional Paper 11-72, 6 pp., May 1972. (Div. 4) AD-742 158

A factorial experiment was designed to determine (a) whether a negative exponential target detection model was adequate for describing the detection of moving human targets by stationary observers, and (b) whether the observer's detection behavior was affected by target speed, target-to-observer range, or the terrain in which the target appeared. Ninety Army enlisted men detected moving human targets in three different types of terrain. Analysis showed that the negative exponential model did not adequately describe the men's detection behavior, but that target speed, target-to-observer range, and the terrain in which the target appeared significantly affected their detection times.

# GENERAL[1]

*Psychology in the Real World: A Perspective on Psychotechnology Today and Ten Years Hence*, by William A. McClelland, Professional Paper 3-72, 9 pp., February 1972; based on paper for symposium at American Psychological Association convention, Miami Beach, Fla., September 1970. (Exec. Off.) AD-743 153

The pace of technological change, its impact and influence on human behavior, and predictions as to the state of psychotechnology in 1980 are discussed. The author deals with contributions of behavioral scientists working in military and industrial settings toward solving societal problems. Topics emphasized include the technology of teaching and learning, organizational processes and the design of organizations, and psychotechnology and public policy.

*The General Concept of Managing for Educational Accountability* by John E. Taylor and Robert G. Smith, Jr., Professional Paper 4-72, 8 pp., February 1972; based on paper for Western Regional Research Coordinating Unit Directors Conference, Squaw Valley, Calif., September 1970. (Div. 3 and Exec. Off.) AD-743 154

The first section of the paper defines project accountability, presents background to the concept, and highlights current problems in the public school system. The paper is also concerned with assessment procedures that make provisions for accountability in (a) attainment of terminal objectives and (b) phase-by-phase conduct of a project in pursuit of terminal objectives.

*Performance Measurement in Helicopter Training and Operations*, by Wallace W. Prophet, paper for American Psychological Association convention, Washington, D.C., September 1971; issued as Professional Paper 10-72, 15 pp., April 1972. (Div. 6) AD-743 157

For almost 15 years, HumRRO Division No. 6 has conducted an active research program on techniques for measuring the flight performance of helicopter trainees and pilots. This program addressed both the elemental aspects of flying (i.e., maneuvers) and the mission- or goal-oriented aspects. A variety of approaches has been investigated, with the stress on nonautomated techniques feasible for operational use. This paper describes the work and illustrates its application to and implications for training management, quality control, manpower resources management, and operational capability. Automated human performance monitoring in flight simulators and its implications for automated training is also described.

"Army Training and Education in the '70s," by Howard H. McFann, paper for 17th Annual Army Human Factors R&D Conference, Fort Bragg, N.C., November 1971. (Div. 3)

This paper discusses occupational or MOS training at the individual training level, and the need for training personnel to be versed in existing instructional technology encompassing three general areas: (a) training content, (b) evaluation, and (c) the instructional system. Army trends and changes in the 70s will include an increased emphasis on developing and applying a technology for improving the evaluation of Unit performance, and the use of Units for aiding in worldwide civilian disasters and emergencies. There will be three kinds of educational activity: (a) for those who need it, remedial work in basic literacy skills; (b) development training; and (c) educational programs designed to further the attractiveness of the service.

"Some Current Issues in the Design of Flight Training Devices," by Wallace W. Prophet, Paul W. Caro, and Eugene R. Hall, 25th Anniversary *Commemorative Technical Journal*, November 1971, Naval Training Device Center, Department of the Navy; issued as Professional Paper 5-72, 11 pp., March 1972. (Div. 6) AD-743 270

This paper develops the rationale that training equipment should be selected or designed to furnish what the student needs to know and to be able to do to perform successfully on the operational job. Several considerations relevant to training equipment design from the systems engineering standpoint are examined. Suggested design features based upon particular student learning needs and on student learning characteristics are presented. Training equipment design features for particular categories of training objectives and for levels of training (e.g., initial training of aviators vs. transition training) are considered. Also discussed is the criticality of the synthetic training program with respect to the total training engineering process.

[1] Items in this section either are not directly related to specific elements of the research program, or are related to several elements.

"Individualized Training and the Training of Individuals," by William A. McClelland, paper for XVIIth International Congress of the International Association of Applied Psychology, Liege, Belgium, July 1971; issued as Professional Paper 24-71, 10 pp., December 1971. (Exec. Off.) AD-743 151

Two current instructional research efforts relating to the problem of an individual student's learning and personal needs are reported. Characteristics of individualized instruction (e.g., terminal course objectives, remedial materials, measurement procedures), administrative constraints (e.g., fixed time, cost of equipment, lack of skilled instructors), training strategies and goals are discussed. The APSTRAT research involves peer instruction and provides for self-pacing, rapid feedback, and practice. Project IMPACT is an effort to provide the U.S. Army with an effective, efficient, and economical computer-administered instructional system.

"Structural Coherence in Pictorial and Verbal Displays," by Ronald W. Spangenberg, *Journal of Educational Psychology*, vol. 62, no. 6, December 1971; issued as Professional Paper 2-72, 9 pp., January 1972. (Div. 2) AD-743 273

The effects of three levels of structural coherence within verbal and pictorial displays were examined. A nonsense syllable was associated with each item as the initial task; the second task was to learn 20 sentences successively presented on a memory drum. Initial learning showed significant superiority of pictorial over verbal groups. Initial learning of displays showing overall structural coherence provided significant improvement in learning the transfer task, as did initial learning of pictorial displays. These results relate both to the design of instructional displays and inferences concerning mental operations.

"Voluntary Inhibition of Galvanic Skin Response," by William H. Ton and John R. Boulger, *Psychological Reports*, vol. 29, 1971, pp. 603-606; issued as Professional Paper 23-71, 6 pp., December 1971. (Div. 5) AD-743 272

An experiment was designed to assess the effectiveness of instructional set in voluntary inhibition of Galvanic Skin Response (GSR). Male subjects were assigned three treatment groups, each of which treated the problem under different instructions. Analyses of suppression are given.

" 'If It Exists, It Can Be Measured'—But How?" by Eugene A. Cogan, paper for New York University First National Annual Training in Business and Industry Conference, New York City, March 1972. (Exec. Off.)

In making a job performance evaluation, anything that can be specifically defined can be measured. However, to develop a testing program that is both useful and cost-effective, it must be known who will make what decisions, using the obtained measurements. Analysis and interpretation of the particular purpose and setting are needed. Feedback data show how improved decisions can produce dollar gains far beyond the cost of developing and employing measurement.

"Measuring Effectiveness: Quality Control of Training," by J. Daniel Lyons, paper for New York University First National Annual Training in Business and Industry Conference, New York City, March 1972. (Div. 1)

In this paper, the essential elements of a quality control system are illustrated, including (a) training objectives or performance requirements, (b) proficiency and diagnostic measures, (c) data reduction and analysis, (d) procedures for decision and corrective action, (e) communication procedures, and (f) managerial support. It is shown that training goals must be defined in terms of measurable on-the-job performance.

"The Problems of Using Systems Approach in General Education," by Eugene R. Michaels, paper for California Association for Educational Media and Technology (CAIT) Convention, San Diego, Calif., March 1972. (Div. 3)

This paper discusses three preconditions for successful use of the systems approach in education: (1) there needs to be some objective and empirical means of deriving the goals of instruction; (2) the methods used to teach must be opened to fundamental reorganization so that full use can be made of the possibilities of all instructional media; (3) the objectives of an instructional system should be such that they can be realized within a relatively short time—weeks or months, rather than years.

"An Analysis of the Impact of VOLAR (Volunteer Army) Actions at Fort Benning," by T.O. Jacobs, paper for Psychology in the Air Force Symposium, U.S. Air Force Academy, Colorado Springs, Colo., April 1972. (Div. 4)

This paper describes an evaluation of the first year of experience at Fort Benning with actions designed to increase attractiveness of military service and thus decrease reliance on inductions (VOLAR). Through the use of a pre-VOLAR questionnaire, for baseline purposes, and periodic subsequent administrations, it was possible to assess VOLAR impact on career intentions and general attitudes toward the Army. VOLAR actions had greatest impact on soldiers' feelings about inequities, and less on needs for effective leadership, security, and pride in service. Soldiers' measured career intentions have increased systematically during the period of evaluation.

"Psychological Characteristics of Urban Insurgents," by Warren R. Graham, paper for meeting of Military Operations Research Society, Colorado Springs, Colo., June 1972. (Div. 7)

This paper is a discussion of behaviors observed during urban insurgencies, their relationships to similar behaviors by differently motivated groups and individuals, and the psychological knowledge that is available to explain the behaviors observed. Particular attention is paid to differences in attitudes, beliefs, and other motivations that distinguish the insurgent criminal from other criminal and psychologically abnormal groups and individuals. The possibility of developing and applying psychological science for the purpose of identifying insurgents and possible insurgent recruits is discussed.

# APPENDICES

## Appendix A

# FY 72 TECHNICAL REPORTS AND PROFESSIONAL PAPERS BY NUMBER[1]

### Technical Reports

71-16 *The Effects of a 48-Hour Period of Sustained Field Activity on Tank Crew Performance.* (ENDURE II).

71-17 *Selection and Training for Small Independent Action Forces: Development of Materials and Procedures.* (Research for Advanced Research Projects Agency) (SIAF)

71-18 *Preliminary Handbook on Procedures for Evaluating Mental Health Indirect Service Programs in Schools.* (Research for National Institute of Mental Health) (CONVAL)

71-19 *Analyses of WIN Team Functioning and Job Requirements.* (Research for the Department of Labor) (WIN I)

71-20 *Organizational Factors in the Performance of Social Welfare and Rehabilitation Workers.* (Research for the Department of Health, Education, and Welfare) (Organizational Factors)

71-21 *Project IMPACT—Computer-Administered Instruction: Preparing and Managing the Content of Instruction, IMPACT Text-Handling Subsystem.* (IMPACT)

71-22 *Comparison and Evaluation of Printed Programs for Aircraft Recognition.* (STAR III)

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[1] Research for the Department of the Army unless otherwise noted.

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